

REMARKS/ARGUMENTS

Claims 1, 4, 5, and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication Nos. 2002/0172149 (Kinoshita et al.) and 2003/0117950 (Huang). For the reasons set forth below, applicants respectfully request reconsideration of the rejections.

The Kinoshita et al. patent is directed to a method and apparatus for protection path setup. Bandwidth is shared among protection paths only if there is no possibility that any of the protection paths will be used simultaneously. As noted by the Examiner, Kinoshita et al. fail to teach wherein bandwidth to be protected of a link pair comprises a lesser of primary bandwidths of links of the link pair traversing a node to be protected.

Huang discloses a link redial for mesh protection. A backup path is established at the time of setup of an original path, and responsive to the single failure, the backup path is used to route traffic around a failed path segment. A backup LSP may be set up between a head end node and a tail end node to protect each working link in a working bundle. For example, as shown in Fig. 1 and described at paragraphs [0034]-[0040], a backup path through nodes 102C, 102D, and 102E may be set up with sufficient bandwidth to cover traffic from node 102Y passing through primary link 104AB connecting nodes 102A and 102B. This backup path may also be used for traffic from node 102X, for example. The bandwidth to be protected by Huang is the bandwidth over a link 104AB from one or more nodes. Huang does not discuss bandwidth to be protected of a link pair. Instead, Huang is concerned with a backup path for a failed link (e.g., 104AB). The nodes at the ends of the link (e.g., 102A, 102B) are used in the backup path. In contrast to Huang, applicants' invention is directed to protecting a node and providing backup for a link pair traversing the node. Since Huang does not address protecting bandwidth of a link pair, there is no discussion of bandwidth to be protected comprising a lesser of primary bandwidths of a link pair traversing a node to be

protected, as set forth in the claims. The only bandwidth Huang is concerned with is the bandwidth required to cover a link failure between two nodes (e.g., link 104AB between nodes 102A and 102B). Huang protects a path segment (e.g., link) and uses only a single bandwidth value for the path segment, therefore, there is no pair of links to select between.

Accordingly, claim 1 is submitted as patentable over Kinoshita et al. and Huang.

Claims 3-7, depending from claim 1 are also submitted as patentable for at least the same reasons as claim 1.

Claims 16 and 25 are submitted as patentable for the reasons discussed above with respect to claim 1.

Claims 3 and 6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al. and Huang in view of U.S. Patent Publication No. 2002/0067693 (Kodialam et al). As discussed in previous responses, Kodialam et al. do not overcome the deficiencies of the primary reference.

Claims 8 and 9 stand rejected under 35 U.S.C 103(a) as being unpatentable over Kinoshita et al. and Ryutaro Kawamura, Ken-ichi Sato, and Ikuo Tokizawa, "Self-Healing ATM Networks Based on Virtual Path Concept", January 1994, IEE, Vol. 12, No. 1, pages 120-127 (Kawamura). Claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura and Kinoshita et al. and further in view of Kodialam et al.

Kinoshita et al. do not show or suggest wherein there is at least one set of backup tunnels that protect disparate nodes and that consume more bandwidth on at least one link than provided by at least one link's backup bandwidth pool. In rejecting the claims, the Examiner refers to paragraph [0186] of Kinoshita et al. This section of the patent refers to setting up a first protection path when there is no other path with which the bandwidth can be shared. The resource control section is notified that the bandwidth must be increased to provide the required bandwidth. The resource control

section checks to see if the required bandwidth is available from the unused bandwidth and reports the result to the path setup control section. Kinoshita et al. check to see if the required bandwidth is available and do not set up backup tunnels that consume more bandwidth than provided by a link's backup bandwidth pool.

Also, as noted by the Examiner, Kinoshita et al. fail to teach wherein establishing backup tunnels comprises signaling backup paths with zero bandwidth to adjacent nodes of each protected node.

Kawamura is directed to self-healing ATM networks based on virtual path concept. A virtual backup path is used to send a restoration message. Each node that receives the restoration messages captures the appropriate bandwidth on the link and retransmits the message to the next node on the backup route. The virtual path (VP) is only used for one link or node failure and only as a backup for a virtual path failure. A new restoration route is found for other failures (page 122).

As described at pages 120-121 of Kawamura, the bandwidth of a VP is logically defined in the database of a VP terminator or cross-connect. Thus, a VP route can be established without assigning its bandwidth along the path. In contrast to Kawamura, the backup tunnels of applicants' invention consume bandwidth from backup bandwidth pools of links. There is no signaling of backup bandwidth reservation for the backup tunnels from one node to another node – that is the backup tunnels are signaled with zero bandwidth. The backup bandwidth used by the backup tunnels for one node may therefore also be used by backup tunnels that protect other nodes. This is different than the virtual path of the ATM networks in Kawamura which assign the bandwidth of a virtual path at a node rather than assigning bandwidth along the path of the VP.

Accordingly, claims 8, 12, 15, 21, and 30, and the claims depending therefrom, are submitted as patentable over the cited references.

For the foregoing reasons, Applicants believe that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a

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telephone conference would in any way expedite prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'C. Kaplan', with a stylized flourish at the end.

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